

Appl. No. 09/871,013

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CLAIM AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended). A method for electrically contacting a rear side of a semiconductor substrate when processing the semiconductor substrate, the method comprising ~~which comprises:~~

providing a substrate holder having a vacuum line for producing a vacuum;

providing a semiconductor substrate having a substrate rear side and a substrate front side disposed opposite from the substrate rear side, the semiconductor substrate being doped with charge carriers having a first polarity;

providing an electrically conductive contact layer formed of a semiconductor material doped with charge carriers having the first polarity;

forming a first trench in the electrically conductive contact layer starting from a first surface of the electrically conductive contact layer;

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forming a second trench in the electrically conductive contact layer starting from a second surface of the electrically conductive contact layer;

forming a hole in the electrically conductive contact layer extending from the first surface of the electrically conductive contact layer to the second surface of the electrically conductive contact layer;

removing an insulating layer disposed on the substrate rear side; and

placing the semiconductor substrate with the substrate rear side on ~~a~~ the substrate holder ~~such that an~~ with the electrically conductive contact layer ~~formed of a semiconductor material is being~~ disposed between the semiconductor substrate and the substrate holder, the first side of the electrically conductive contact layer facing the semiconductor substrate and the second side of the electrically conductive contact layer facing the substrate holder; and

applying a vacuum to the vacuum line, feeding the vacuum through the hole from the second surface of the electrically conductive contact layer to the first surface of the

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electrically conductive contact layer, and distributing the vacuum uniformly over the rear side of the semiconductor substrate.

Claim 2 (original). The method according to claim 1, which comprises providing the electrically conductive contact layer as a diffusion barrier against materials forming the substrate holder.

Claim 3 (original). The method according to claim 1, which comprises providing the electrically conductive contact layer as a doped layer wherein the electrically conductive contact layer and the semiconductor substrate are doped with a same type of charge carriers.

Claim 4 (currently amended). The method according to claim 1, which comprises forming ~~a~~ the first trench in the electrically conductive contact layer starting from ~~a~~ the first surface of the electrically conductive contact layer facing the semiconductor substrate.

Claim 5 (original). The method according to claim 1, which comprises forming a mesa in a surface of the electrically conductive contact layer facing the semiconductor substrate.

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Claim 6 (currently amended). The method according to claim 1, which comprises forming a the hole in the electrically conductive contact layer such that the hole extends from a surface of the electrically conductive contact layer facing the semiconductor substrate to a further surface of the electrically conductive contact layer facing the substrate holder.

Claim 7 (currently amended). The method according to claim 1, which comprises:

forming a the first trench in the electrically conductive contact layer starting from a the first surface of the electrically conductive contact layer facing the semiconductor substrate; and

forming a the second trench in the electrically conductive contact layer starting from a the second surface of the electrically conductive contact layer facing the substrate holder.

Claim 8 (original). The method according to claim 1, which comprises:

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forming a first mesa in a surface of the electrically
conductive contact layer facing the semiconductor substrate;
and

forming a second mesa in a surface of the electrically
conductive contact layer facing the substrate carrier.

Claim 9 (original). The method according to claim 4, which
comprises generating a given pressure in one of the first and
second trenches ~~trench~~, the given pressure in the one trench
being lower than a pressure at the substrate front side.

Claim 10 (currently amended). A method for electrically
contacting a rear side of a semiconductor substrate when
processing the semiconductor substrate, the method comprising
~~which comprises:~~

providing a substrate holder having a vacuum line for
producing a vacuum;

providing a semiconductor substrate having a substrate rear
side and a substrate front side disposed opposite from the
substrate rear side, the semiconductor substrate being doped
with charge carriers having a first polarity; and

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providing an electrically conductive contact layer formed of a semiconductor material doped with charge carriers having the first polarity;

forming a first trench in the electrically conductive contact layer starting from a first surface of the electrically conductive contact layer;

forming a second trench in the electrically conductive contact layer starting from a second surface of the electrically conductive contact layer;

forming a hole in the electrically conductive contact layer extending from the first surface of the electrically conductive contact layer to the second surface of the electrically conductive contact layer;

placing the semiconductor substrate with the substrate rear side on a the substrate holder such that an with the electrically conductive contact layer ~~formed of a semiconductor material is being~~ disposed between the semiconductor substrate and the substrate holder for electrically contacting the substrate rear side when processing the semiconductor substrate, the first side of the electrically conductive contact layer facing the semiconductor

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substrate and the second side of the electrically conductive contact layer facing the substrate holder; and

applying a vacuum to the vacuum line, feeding the vacuum through the hole from the second surface of the electrically conductive contact layer to the first surface of the electrically conductive contact layer, and distributing the

vacuum uniformly over the rear side of the semiconductor substrate.

Claim 11 (new). A method for electrically contacting a rear side of a semiconductor substrate when processing the semiconductor substrate, the method comprising:

providing a substrate holder having a vacuum line for producing a vacuum;

providing a semiconductor substrate having a substrate rear side and a substrate front side disposed opposite from the substrate rear side, the semiconductor substrate being doped with charge carriers having a first polarity;

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providing an electrically conductive contact layer formed of a semiconductor material doped with charge carriers having the first polarity;

forming a first mesa in the electrically conductive contact layer starting from a first surface of the electrically conductive contact layer;

forming a second mesa in the electrically conductive contact layer starting from a second surface of the electrically conductive contact layer;

forming a hole in the electrically conductive contact layer extending from the first surface of the electrically conductive contact layer to the second surface of the electrically conductive contact layer;

removing an insulating layer disposed on the substrate rear side; and

placing the semiconductor substrate with the substrate rear side on the substrate holder with the electrically conductive contact layer being disposed between the semiconductor substrate and the substrate holder, the first side of the electrically conductive contact layer facing the semiconductor

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substrate and the second side of the electrically conductive contact layer facing the substrate holder; and

applying a vacuum to the vacuum line, feeding the vacuum through the hole from the second surface of the electrically conductive contact layer to the first surface of the electrically conductive contact layer, and distributing the vacuum uniformly over the rear side of the semiconductor substrate.

Claim 12 (new). The method according to claim 11, which comprises providing the electrically conductive contact layer as a diffusion barrier against materials forming the substrate holder.

Claim 13 (new). The method according to claim 11, which comprises providing the electrically conductive contact layer as a doped layer wherein the electrically conductive contact layer and the semiconductor substrate are doped with a same type of charge carriers.

Claim 14 (new). The method according to claim 11, which comprises forming the hole in the electrically conductive contact layer such that the hole extends from a surface of the electrically conductive contact layer facing the semiconductor

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substrate to a further surface of the electrically conductive contact layer facing the substrate holder.

Claim 15 (new). The method according to claim 11, which comprises forming the first mesa in the electrically conductive contact layer starting from the first surface of the electrically conductive contact layer facing the semiconductor substrate.

Claim 16 (new). The method according to claim 11, which comprises forming the first mesa in the first surface of the electrically conductive contact layer facing the semiconductor substrate.

Claim 17 (new). The method according to claim 11, which comprises:

forming the first mesa in the electrically conductive contact layer starting from the first surface of the electrically conductive contact layer facing the semiconductor substrate; and

forming the second mesa in the electrically conductive contact layer starting from the second surface of the electrically conductive contact layer facing the substrate holder.

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Claim 18 (new). The method according to claim 11, which comprises:

forming the first mesa in the first surface of the electrically conductive contact layer facing the semiconductor substrate; and

forming the second mesa in the second surface of the electrically conductive contact layer facing the substrate carrier.